

### REMARKS

The Examiner is thanked for pointing out the inadvertent admission of equations from the Substitute Specification. The Substitute Specification has been amended in paragraphs [0020] and [0026]. The amendment to paragraph [0026] corrects the informality noted by the Examiner.

It is noted that the Examiner has withdrawn the rejection of the claims based upon an insufficient disclosure. For purposes of completing the record, it is requested that the Examiner acknowledge Applicants' Supplemental Response on October 27, 2003 which occurred one day before the Office Action. Applicants understand that the rejection is now moot but wish for the Examiner to acknowledge this submission as part of the record.

Claims 1-11 stand rejected under 35 U.S.C. 102 as being anticipated by the Hasan publication "A Mechanistic Model for Circulating Fluid Temperature". This ground of rejection is traversed for the following reasons.

Claim 11 recites:

A method of determining a thermal profile of a drilling fluid circulating in a well during drilling, comprising the steps:

e) determining an expression  $\theta_1$  of a thermal profile of the drilling fluid inside the drill string in the well and a expression  $\theta_2$  of a thermal profile of the drilling fluid in an annulus surrounding the drill string, using a heat propagation equation accounting for a thermal profile of a medium surrounding the well;

f) measuring a temperature T1 of the drilling fluid at a well inlet, a temperature T2 at a bottom of the well, and a temperature T3 at a well outlet; and wherein

g) the expressions  $\theta_1$  and  $\theta_2$  meet temperature boundary conditions of T1, T2 and T3.

Applicants' submit that Hasan does not anticipate claims 11-18. Claim 11 requires the determining of expressions of a thermal profile of the drilling fluid inside the drill string in a well and a thermal profile of the drilling fluid in an annulus surrounding the drill string, measuring three temperatures T1 of the drilling fluid at the well inlet, a temperature T2 at the bottom of the well and a temperature T3 at the outlet and further, and that the expressions of the thermal profile of the drilling fluid inside the drill string in the well and the thermal fluid of the drilling fluid in the annulus surrounding the drill string meet temperature boundary conditions of T1, T2 and T3. It is again submitted that this subject matter is not disclosed by Hasan.

The Examiner is apparently relying on equations 5 and 6 of Hasan. However, the Examiner has not articulated how equations 5 and 6 meet the foregoing limitations. Applicants again insist the Examiner explain his position on the record since it is asserted that the recited relationships discussed above in claim 11 are not suggested by equations 5 and 6 which is the only apparent or stated reasoning on the record regarding how the Examiner interprets claims 11-18 to be anticipated.

Moreover, on page 2 in paragraph 4, the Examiner refers to "matching the measured data (Davies et al) is shown in Fig. 11". However, the graph of Fig. 11 is merely inlet temperature versus circulation time. It is not understood how the Examiner is interpreting Fig. 11, or some other part of Hasan, which has not been identified, as anticipating the above relationships.

As the Examiner is aware, for an anticipation rejection to be proper, it is necessary that every limitation of the claim must be literally or inherently present.

For the reasons set forth above regarding claim 11, it is submitted that claims 11-18 are not anticipated.

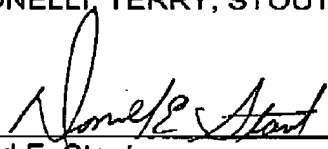
Dependent claims 12-18 and apparently claims 21-41 are submitted to be not anticipated by Hasan in view of the fundamental differences between Hasan and claim 11 discussed above and which is further more specifically limited by the aforementioned dependent claims. Accordingly, early allowance thereof is respectfully requested.

Finally, it is submitted that claims 19-20 and 42-46, which stand rejected on obviousness over Hasan, are not obvious. The discussion of the rejection of claims 19-20 and 42-46 does not cure the deficiencies discussed above regarding Hasan.

To the extent necessary, Applicants petition for an extension of time under 37 C.F.R. §1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (612.40801X00) and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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